



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/760,599

01/20/2004

Stephen R. Van Doren

200313613-1

1105

22879

7590

10/06/2006

HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

CHERY, MARDOCHEE

ART UNIT

PAPER NUMBER

2188

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/760,599	Applicant(s) VAN DOREN ET AL.	
	Examiner Mardochee Chery	Art Unit 2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to applicant's communication filed on July 3, 2006, in response to PTO Office Action mailed on April 19, 2006. The Applicant's remarks and amendments to the claims and/or the specification were considered with the results that follow.
2. In response to the last Office Action, claims 12 and 18 have been amended. Claims 1-30 remain pending.
3. The rejection of claims 18 and 26 under 35 USC 112 has been withdrawn due to the amendment filed on July 3, 2006.

Response to Arguments

4. Applicant's arguments, see remarks, filed July 3, 2006, with respect to the rejection(s) of claim(s) 1-30 under 35 USC 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Glasco (2005/0251626).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-4, 9, 14, 16-17, 20, 23-24, and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Glasco (2005/0251626).

As per claim 1, Glasco discloses a system comprising: a first node that includes an ordering point for data [par. 45, ll 1-3], the first node being operative to employ a write-back transaction associated with writing data back to memory [par. 116, ll 5-8], the first node broadcasting a message to at least one other node in the system in response to an acknowledgement provided by the memory indicating that the ordering point for the data has migrated from the first node to the memory [par. 87, ll 11-16; pars. 120-123].

As per claim 2, Glasco discloses the first node comprises a processor having an associated cache that comprises a plurality of cache lines, one of the plurality of cache lines having an associated state that defines the cache line as a cache ordering point for the data prior to employing the write-back transaction [par. 126].

As per claim 3, Glasco discloses the at least one other node provides a response to the first node acknowledging receipt of the write-back message broadcast by the first node [par. 126].

As per claim 4, Glasco discloses the first node maintains the write-back transaction active until the first node receives responses from the at least one other node to the write-back message broadcast by the first node [pars. 121-123, par. 127, ll 13-15].

As per claim 9, the rationale in the rejection of claims 1 and 2 is herein incorporated.

As per claim 14, Glasco discloses the first processor comprises a cache line that contains the desired data in a state that defines the cache line as the ordering point for the desired data prior to issuing the write-back request to the memory [par. 87, ll 11-16; pars. 120-123].

As per claim 16, the rationale in the rejection of claim 1 is herein incorporated.

As per claim 17, the rationale in the rejection of claim 2 is herein incorporated.

As per claim 20, the rationale in the rejection of claim 2 is herein incorporated.

As per claim 23, the rationale in the rejection of claim 1 is herein incorporated.

As per claim 24, the rationale in the rejection of claim 3 is herein incorporated.

As per claim 29, the rationale in the rejection of claim 2 is herein incorporated.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 5-6, 8, 10-11, 13, 15, 18-19, 21-22, 25-28, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glasco (2005/0251626) in view of Rowlands (2003/0217236).

As per claim 5, Glasco discloses a third node that issues a source broadcast request for the data employing a source broadcast protocol [par. 127].

However, Glasco does not specifically teach the third node retrying the source broadcast request for the data in response to recognizing a conflict associated with the source broadcast request for the data as required.

Rowlands discloses the third node retrying the source broadcast request for the data in response to recognizing a conflict associated with the source broadcast request for the data [pars. 57 and 113] to write back a remote cache block that is being evicted from the node (par. 65).

Since the technology for implementing a system with a third node retrying the source broadcast request for the data in response to recognizing a conflict associated with the source broadcast request for the data was well known as evidenced by Rowlands, an artisan would have been motivated to implement this feature in the system of Glasco in order to write back a remote cache block that is being evicted from the node. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention by Applicant to modify the system of Glasco to include a third node retrying the source broadcast request for the data in response to recognizing a conflict associated with the source broadcast request for the data because this would have facilitated writing back a remote cache block that is being evicted from the node (par. 65) as taught by Rowlands.

As per claim 6, Glasco discloses the conflict is recognized by the third node in response to one of (i) receiving the write-back message broadcast by the first node

while the source-broadcast request for the data is active at the third node, or (ii) receiving a conflict response from the first node to the source broadcast request issued by the third node [par. 127].

As per claim 8, Rowlands discloses the first node further comprises a request engine having an associated miss address file, the request engine allocating an entry in the miss address file associated with the write-back transaction for the data that is maintained in the miss address file until responses have been received from all other nodes in the system to the write-back message broadcast by the first node [par. 65].

As per claim 10, the rationale in the rejection of claim 5 is herein incorporated.

As per claim 11, the rationale in the rejection of claim 6 is herein incorporated.

As per claim 13, the rationale in the rejection of claim 8 is herein incorporated.

As per claim 15, Glasco discloses the state that defines the cache line as the ordering point for the desired data is selected from a group consisting of a modified state, an owner state and a dirty state, the cache line transitioning to an invalid state after issuing the write-back request to the memory [par. 87, ll 11-16; par. 120].

As per claim 18, the rationale in the rejection of claim 5 is herein incorporated.

As per claim 19, the rationale in the rejection of claim 5 is herein incorporated.

As per claim 21, the rationale in the rejection of claim 15 is herein incorporated.

As per claim 22, the rationale in the rejection of claim 15 is herein incorporated.

As per claims 25 and 26, the rationale in the rejection of claim 5 is herein incorporated.

As per claim 27, the rationale in the rejection of claim 5 is herein incorporated.

As per claim 28, the rationale in the rejection of claim 6 is herein incorporated.

As per claim 30, the rationale in the rejection of claim 15 is herein incorporated.

9. Claims 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glasco (2005/0251626) in view of Rowlands (2003/0217236) and further in view of Arimilli (6,138,218).

As per claim 7, Glasco and Rowlands disclose the claimed invention as discussed above.

However, Glasco and Rowlands do not specifically teach a third node retries the source broadcast request employing a forward progress protocol as required.

Arimilli discloses a third node retries the source broadcast request employing a forward progress protocol [col. 1, ll 6-12] in order to allow other traffic to proceed and alleviate the prospect of a livelock (col. 1, ll 13-14).

Since the technology for implementing a system with a third node retries the source broadcast request employing a forward progress protocol was well known as evidenced by Arimilli, an artisan would have been motivated to implement this feature in the system of Glasco and Rowlands in order to allow other traffic to proceed and alleviate the prospect of a livelock. Thus, it would have been obvious to one of ordinary skill in the art, at the time of invention by Applicant, to modify the system of Glasco and Rowlands to include a third node retrying the source broadcast request employing a forward progress protocol since this would have allowed other traffic to proceed and alleviated the prospect of a livelock (col. 1, ll 13-14) as taught by Arimilli.

As per claim 12, the rationale in the rejection of claim 7 is herein incorporated.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mardochee Chery whose telephone number is (571) 272-4246. The examiner can normally be reached on 8:30A-5:00P.

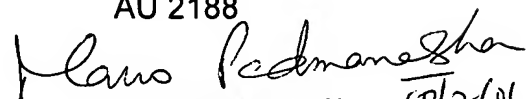
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Manonama Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

October 1, 2006



Mardochee Chery
Examiner
AU 2188



MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER

10/2/06